NCI Center for Bioinformatics

Informatics Seminar Series

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Building Intelligent Computer Systems to Support Protocol-Based Care

2:00 until 4:00 PM
April 9, 2001

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EPN 7107

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Intelligent information systems have the capacity to streamline the accrual and management of patients in clinical trials, and to assist in enforcing appropriate clinical-practice guidelines. Development of such systems requires the ability to represent the details of clinical protocols in a form that can be interpreted and processed by the computer. An additional requirement is the construction of tools that allow clinicians to create new protocol knowledge bases and to browse and edit previously entered specifications.

At Stanford, we have been developed a system for constructing large electronic knowledge bases known as Protege-2000. In this talk, I will describe how Protege-2000 permits developers to encode electronic knowledge bases of individual clinical trials, and to apply those knowledge to particular problems in patient care. Protege-2000 supports development of knowledge bases in a fashion that facilitates reuse of encoded knowledge for a variety of purposes. Our approach thus makes it possible to construct a library of encoded protocols and to apply to those protocols a variety of problem solvers, each of which automates a different task (e.g., determination of patient eligibility, planning of therapy according to protocol, estimation of aggregate protocol costs).

The Protege-2000 methodology facilitates development of all kinds of knowledge bases. I will discuss the generality of the approach by highlighting the use of Protege-2000 to build a variety of intelligent systems, including the new national pharmacogenomics resource under construction at Stanford.

Seminar Date
April 16, 2001

Created on 3/30/01 9:13 AM

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